Evaluating a strategy to assist undergraduate healthcare students to gain insights into the value of interprofessional education experiences from recently qualified healthcare professionals

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Contents

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Executive Summary

Purpose: This exploratory pilot study aimed to evaluate a strategy designed to assist undergraduate healthcare students to gain insights from recently qualified healthcare professionals into the value of pre-registration Interprofessional Education (IPE) experiences. The secondary aims of the study were to enable participating undergraduate healthcare students develop research skills and to examine how the views from the healthcare professionals could inform the development of pre-registration IPE.

Relevance: Preparing undergraduate healthcare professionals for interprofessional practice is complex. One of the challenges is the variance of undergraduates' perception of the relevance of interprofessional education experiences to the realities of practice. If students can gain insights into the purpose and application of pre-registration IPE to their future practice, from those who have recently gone before, they may be more willing to engage with such learning opportunities. This study supported undergraduate healthcare students to become co-researchers, exploring healthcare graduates' views of pre-registration IPE and subsequent interprofessional practice experiences.

Participants: The research team comprised of seven volunteer undergraduate healthcare students led by the principal investigator. They were associated with four programmes of study: nursing (x1); occupational therapy (x2); physiotherapy (x3); and therapeutic radiography (x1). Average age: 24.7 years (range: 21 – 29). All students were female. Four students were in their final year of study (level 4), with the remainder in level 3. Ten healthcare graduates from Queen Margaret University (QMU), Edinburgh (who had all taken part in the QMU pre-registration IPE programme) volunteered to take part in one-to-one interviews: diagnostic radiography (x2); nursing (x2); occupational therapy (x1); physiotherapy (x4) and podiatry (x1). The healthcare professionals group comprised three males and seven females, average age 25.8 years, age range: 21-38.

Methods: This interpretive, qualitative study used individual, semi-structured telephone interviews (conducted by the undergraduate researchers) to generate data from the healthcare professionals (former QMU students). The researchers used an interview topic guide to explore issues related to the healthcare professionals' perceptions of interprofessional working and pre-registration IPE. All interviews were digitally recorded (with the consent of the interviewee) and were fully transcribed. Thematic analysis was used inductively to generate findings. The undergraduate researchers were involved in the research process from the point of gaining ethical approval to completion of the analysis.

When the analysis was complete, the undergraduate researchers were interviewed, exploring their views on IPE and their perspective on participation in the research process.

Findings: Four themes were developed from the interviews with the healthcare professionals:

1. The realities of practice: working together is an essential part of patient care;
2. Reflections on learning together through pre-registration IPE: the process;
3. Reflections on learning together through pre-registration IPE: the products; and
4. Towards enhancement of pre-registration IPE: the graduates' views.

Five themes were developed from interviews with the undergraduate researchers:

1. Multiple motivations for engaging with the IPE pilot study;
2. Developing valued research knowledge and skills for future studies and practice;
3. Factors that made the pilot project successfully 'fit' with other studies;
4. Viewing pre-registration IPE differently: a more comprehensive and positive outlook; and
5. A diversity of ideas to galvanize future engagement with IPE.

Conclusions: Undergraduate researchers were able to generate valuable, informative data from relatively newly qualified healthcare professionals concerning the reality of interprofessional working and its connections with pre-registration IPE. These findings add to the relatively limited literature in this field and hold specific developmental ideas for Queen Margaret University and for other researchers and educationalists working in the area of pre-registration IPE.

The group of undergraduate researchers reported an important positive shift in their views towards pre-registration IPE, related to its perceived value in equipping graduates for interprofessional practice. In addition, their experience and knowledge of research and, in particular, qualitative research methods was greatly enhanced. The students perceived their involvement in this innovative project as personally and professionally fruitful. The potential for the findings of this pilot project to inform the development of IPE is discussed.

Background

Interprofessional education and collaborative practice

The provision of high quality, person-centered care is a fundamental goal for health and social care providers; however, the highest quality of care is not always apparent. Increasingly, the complex nature of care requires the expertise of more than one profession, therefore the quality of that care is in some part dependent upon the ability of individuals to work together. In extreme cases, where health and/or social care professionals fail to work together in an effective way, there can be catastrophic consequences for individuals, families and communities (for example, Bristol Royal Infirmary Inquiry 2001, House of Commons Health Committee 2003; The Lord Laming Report 2009). These failings, coupled with the desire to support health and social care professionals to develop collaborative working skills, have been the primary drivers of interprofessional education (IPE) initiatives (Olenick 2010).

IPE has been purported to support learners develop knowledge, skills and attitudes which enable them to tackle challenges best approached via collaborative practice (WHO 2010). The World Health Organisation (2010) describe collaborative practice as multiple health workers from different professional backgrounds working together with patients, families, carers and communities to deliver the highest quality of care, which may involve those professionals engaging with any other person who could contribute to achieving the health goals (p.7). Collaborative practice can be viewed as closely related to interprofessional practice (IPP), which is described as occurring when practitioners from two or more professions work together with a common purpose, commitment and mutual respect (WHO Study Group on Interprofessional Education and Collaborative Practice 2008).

The most commonly accepted definition of IPE is provided by CAIPE (1997), ‘occasions when two or more professions learn with, from and about each other to improve collaboration and the quality of care’. The concept of IPE is not new, with publications in the topic from the mid-1960s onward (Barr 2009). Over the past 10 years it has become an integral part of many pre-registration or pre-qualification health and social care professional programmes throughout the UK (Langton 2009).

The rapid growth in pre-registration IPE is underpinned by increasing reference to the requirement that all health and social care graduates are competent regarding interprofessional collaboration and team working in a variety of settings. This is echoed from Government (Department of Health 2001, Scottish Government 2007),

education (QAA 2010) and regulatory bodies for health and social care professionals (HPC 2008, NMC 2008, GMC 2009).

Pre-registration IPE can take many forms, with different combinations of health and/or social care professionals coming together for a variety of learning experiences e.g. seminars, lectures, workshops, online interactive activities, simulation, problem based learning and/or IPE focused practice based learning (Santy et al 2009, Clouder et al 2011). Reeves et al (2011) scoped the IPE literature and found a diverse array of foci for the outcomes associated with pre-registration IPE initiatives: team working, communication, understanding roles, collaboration, interdisciplinary understanding/care, cooperation, relationship skills and inter-agency working. Examination of the literature reveals that the outcomes measured most commonly are located at the level of 'the learner' e.g. changes in the learners' attitudes, their reaction to the learning experiences, developments in knowledge and skills, with relatively few examining the impact upon patient related outcomes and/or behavioural level assessment of change (Remington et al 2006, Reeves et al 2008, Reeves et al 2011).

The emergence of evidence for the effectiveness of pre-registration IPE: finding the path and the pitfalls

Moderate amounts of evidence for the effectiveness of post-registration IPE are apparent, with studies demonstrating a positive impact on patient care (Reeves et al 2008). Relative to this body of knowledge, the evidence for pre-registration interventions is still lacking. Calls for more robust evidence for the effectiveness of pre-registration IPE (in particular including evidence of impact at the level of patient care) continue (Hammick et al 2007, Reeves et al 2010). That said, the emergence of data from comprehensively evaluated, longitudinal studies of IPE are now emerging (Coster et al 2008, Pollard and Miers 2008, Ateah et al 2011) and the publication of further outcomes from relatively large scale projects such as the Trent Universities Interprofessional Learning in Practice Project (TUILIP Project) (Armitage et al 2008) and the New Generation Project (O'Halloran et al 2006) are eagerly awaited.

Questions linked to the 'effectiveness' of IPE are associated with whether an intervention works as intended (Petticrew and Roberts 2006), therefore a focus on effectiveness can narrow the scope of a study or review to considering the intended outcomes of IPE (i.e. promoting health and social care professional collaboration and the quality of care for patients/clients, CAIPE 1997). The Freeth et al (2005) guide to evaluating IPE highlights the value of a variety of different approaches (e.g. positivist, interpretive and change paradigms) to research in IPE. Different types of evaluative questions can relate to what works, when and for whom, and in what circumstances,

and can encompass exploration of the appropriateness and feasibility of IPE in specific contexts.

Hammick et al (2007) reviewed some of the best evidence related to IPE and included 15 studies related to pre-registration IPE initiatives. Their scrutiny of peer reviewed studies (up until 2005) demonstrated a growing consensus that pre-registration IPE is positively received by healthcare students and that it could be aligned with improving students' knowledge and skills related to working together. Fundamentals which support that positive learning experience were related to the perceived authenticity of learning activities and learning group composition and the nature of tutor facilitation.

More recent studies support these findings, demonstrating the positive impact of pre-registration IPE on students' perceptions of other health care professions' role and function (Ateah et al 2011) and levels of confidence regarding interprofessional relationships (Pollard and Miers 2008). Other studies reinforce the finding that students are generally positive about learning together to improve patient care at the onset of IPE (Gibson et al 2008).

The review of Hammick et al (2007) also highlighted some recurring themes which present as challenges associated with the delivery of pre-registration IPE, for example difficulties with logistics (timetabling, availability of appropriate space for inter-professional learning activities) and the variable quality of tutor support. Recent studies suggest that these types of difficulties continue to be experienced (Davies et al 2011, Earland et al 2011, Rosenfield et al 2011). In addition, some studies have now demonstrated that after an initial positive response to learning together, students' attitudes toward learning together become more negative over the programme of studies (Pollard et al 2006; Coster et al 2008). In a study which followed students 9 – 12 months beyond graduation, the healthcare professionals were found to be even more negative about their IPL experiences than they had been at University (Pollard and Miers 2008).

There are many factors that may influence students' perception of the value of the IPE learning experience. It has been repeatedly shown that particular student sub-groups are less positive in their attitude to learning together i.e. male students (Hylin et al 2011), traditional entry age students (i.e. not mature students) and those without past experience of working healthcare or higher education (Coster et al 2008, Hylin et al 2011). Students from particular programmes of study appear to be less positive about IPE than others e.g. radiography students (MacKay 2002, Forte and Fowler 2009) and medical students (Curran et al 2008; Craddock et al 2010).

Qualitative studies have identified that students are critical of pre-registration IPE activities that do not closely relate to notions of interprofessional practice and real-world scenarios (Hammick et al 2007, Rosenfield et al 2011). For some students, the relevance of IPE to clinical practice (Johnson et al 2005, Davies et al 2011) and their profession is difficult to see (Forte and Fowler 2009).

Students highly value practice based learning as a site for learning about collaborative skills and related knowledge (Robson and Kitchen 2007). However, although the use of practice based learning may appear to be the panacea for the apparent 'disconnect' between University based IPE and perceived applicability to practice, placement learning linked to IPE is not without its challenges, linked to variability of experience (Pollard 2009) and the significant resource and organisational implications (The Combined Universities Interprofessional Learning Unit 2005).

Rationale for the study

Learning linked to pre-registration IPE is similar to other learning scenarios, in that it is a complex and continuous process. It depends on an individual's foundation and experiences, the social environment and existing resources/contexts (Jarvis, Holford and Griffin 1998). The findings from the literature detail many and varied factors which can impact upon the students' views of the value of learning together and the applicability to practice and/or their profession. In light of the findings that some students appear to view pre-registration IPE more negatively after exposure to IPE, and that some fail to see the connection between IPE and practice, this study sought to explore whether something could be learned from the healthcare professionals who had experienced IPE and progressed to employment in health and/or social care. Did these professionals see a connection between IPE and collaborative working? Could these former students help current students understand the value of University based pre-registration IPE studies? Could these healthcare professionals throw light upon how IPE could be enhanced?

Past studies which have explored graduates views of pre-registration IPE

Two studies were identified where graduates were approached for their views on pre-registration IPE experiences. Reeves and Freeth (2002) reported on the experiences of 18 of the graduates who had been part of a group of 36 students on an inter-professional training ward. The healthcare professionals, from the fields of medicine, nursing, occupational therapy and physiotherapy were surveyed about their reflections on the training ward experience. Professionals were positive about their experiences, noting the benefits of witnessing interprofessional team working in a

practical sense. They also presented suggestions for improvement of the learning event.

More recently, Pollard, Rickaby and Miers (2008) reported on interview findings from 29 post-graduates who were in practice, who included adult nurses, midwives, physiotherapists and social workers. The aim of the study was to evaluate learning, linked to the inter-professional learning experience the graduates had experienced, asking them to appraise how they felt it prepared them for interprofessional collaborative practice.

Most of the respondents reported that they identified with having to work inter-professionally; it was deemed part of good patient care. Most believed that their learning linked to IPE had been valuable and for some this had become more obvious or apparent when moving into practice. Interestingly, the professionals' views were deemed to be highly comparable with the views of past student groups i.e. the transition from undergraduate to health professional did not seem to alter their views. The professionals offered an array of suggestions for improvement of IPE which included increasing the diversity of professions in the learning groups, having contributions from patients, carers and healthcare professionals in the University.

Given the nature of the views from these studies, it is possible to hypothesize that bringing undergraduates in contact with graduates, to hear their accounts of practice and reflections on learning at University, may be beneficial in helping those students realise the actual and potential value of pre-registration IPE and give them an insight into the nature of inter-professional practice.

The context: pre-registration IPE at Queen Margaret University, Edinburgh

Pre-registration IPE at QMU was integrated in selected healthcare curricula in 2005 as a compulsory module across all four levels of the following BSc (Honours) programmes: diagnostic radiography; nursing; occupational therapy; physiotherapy; podiatry; and therapeutic radiography. The modular aims for each level are presented in Table 1 along with the related summative assessment outlines.

The learning activities are based upon social constructivist underpinning, where students are learning in an active way, i.e. generating new meaning through collaborative working with peers (Atherton 2009). Throughout each year the learning activities focus upon students learning with and from others in small, mixed

profession groups (approximately 6-8 students in each group). Students are given the opportunity to talk about and listen to others' views regarding their roles and responsibilities, sharing ideas about contact and interaction with different patient groups or individual case scenarios, linking this to practice and placement experience. Reflection is a recurring activity – through assessed and non-assessed activities. Students are supported by IPE-tutors and given opportunities to learn using case based learning, seminars based on group work activities, online learning (making use of asynchronous discussion boards) and a variety of trigger materials linked to interprofessional working issues.

Table 1: IPE module aims for each level of study and related summative assessments

Level of study	Module aims	Summative assessment format
1st year	Develop an understanding of interprofessional issues. Gain opportunities to gather information about other professions and agencies involved in health and social care. Initiate negotiation and collaborative interprofessional skills. Explore values, beliefs and perceptions concerned with interprofessional working.	A collaborative group poster which reflects the community profile (30%) An individual assignment containing an appraisal of the student's professional contribution to the task and a reflection on the new knowledge gained about others' roles (70%)
2nd year	Using a case-based approach, enable students to: Gain understanding of the educatory and personal motivations and core aspects of other professions to enable the identification of areas of overlap as well as differences, within a political, health and social care context.	An individual presentation and critical discussion of students' uni-professional roles within the team (50%) An individual reflective piece on the application of a selected model and how it is used in the student's individual profession (50%)
3rd year	Using a case based approach to enable students to: Analyse their own and others' roles in caring for patients/clients and debate the different practical, ethical and communication issues used within interprofessional care of clients/patients.	A leader-and peer-assessed 30 minute group presentation within a conference setting (60%). A reflective report on the individual's participation in the interprofessional education learning process (40%).
4th year	To support students to evaluate team management issues in the social and political context which they occur with reference to the patient/client perspective on that team work.	A critical evaluation of the impact on the user of service redesign (80%) A grade for participation in online, small group discussion (20%)

Aims and Objectives

The pilot study had one primary aim and two secondary aims.

Primary aim:

- To evaluate a strategy designed to assist undergraduate healthcare students to gain insights from recently qualified healthcare professionals into the value of pre-registration interprofessional education experiences.

Secondary aims:

- To enable participating undergraduate healthcare students develop research skills; and
- To examine how the views of the healthcare professionals could inform the development of pre-registration interprofessional education.

Objectives

To support a group of volunteer, undergraduate healthcare students to become co-researchers in the conduct of an exploratory, qualitative study which has the following objectives:

- To explore how recent healthcare graduates view interprofessional working demands in practice.
- To explore the healthcare professionals' views on how their experiences of pre-registration IPE prepared, or failed to prepare, them for interprofessional practice.
- To explore the healthcare professionals' views on how pre-registration IPE could be designed and/or delivered to improve graduates' readiness for the realities of interprofessional practice.
- To propose how the findings from the study could be used to inform pre-registration IPE. To explore the co-researchers' (undergraduate researchers) views on the impact of their participation regarding research knowledge and skills, perspectives on pre-registration IPE and interprofessional practice.

Methodology

This study adopted an interpretive, qualitative approach to address the research aims. The perspective of the researchers aligns with the ontological position of constructionism, where the phenomena of interest is not separate from those involved in its perception, therefore the interpretive position or how someone (for example a student or professional) interprets, understands or experiences phenomena is of interest (Bryman 2001, Silverman 1993). The nature of this approach places value upon the participants' accounts and is sensitive to the relationship between the researcher and the 'researched', appreciating that the generation of findings, i.e. the production of dialogue and transcripts, is a co-construction of meaning (Denzin and Lincoln 1998).

Recruitment

Healthcare graduates were recruited via email contact made by tutors that were linked with their 'home' programme e.g. a nursing tutor would email a letter of introduction to a known recent graduate to ask if they would be interested in this study. Where permission was granted by the graduate, a follow up email would be delivered by the principal investigator (PI), including attachment of the Information Sheet and Consent form. Any additional questions about the research were addressed by email and/or telephone contact. The PI liaised with the healthcare graduates to coordinate a best time and date for the UGR to call, to conduct the interview.

The UGRs were all recruited via a University-wide email message, circulated by the Research Moderator. All volunteers were requested to get in touch with the PI, via email, for additional information and given an opportunity to ask more questions.

Ethical considerations

Ethical approval for the study was obtained from Queen Margaret University, Edinburgh. All potential interviewees (graduates and undergraduate researchers) were provided with information sheets about the project and given time to consider participation and were given the opportunity to ask questions. All where assured of anonymity and confidentiality and the right to withdraw at any stage of the study. All participants were required to provide written, informed consent to enable participation.

Maintaining confidentiality and anonymity

All identifying information associated with the study (e.g. interviewee profiles or digital recordings) was altered to protect the participants confidentiality at all stages of the research. All interview material was coded and participants' names and identifying features (e.g. reference to a particular programme of study or tutor) were removed.

Data protection and management

Identifiable data related to participants e.g. addresses for correspondence, were stored on a password protected, secured PC. All paper files were kept in a locked file.

Generating the findings

Data for the project was generated between October 2010 and June 2011. Individual, semi-structured, telephone interviews of the healthcare graduates were conducted by the UGRs. These telephone interviews were arranged by the PI and were all conducted in a small, private room at the University. All interviews were digitally recorded and the file was downloaded to a PC immediately after recording (the audio file was then deleted). The individual, semi-structured telephone interviews of the UGR were subsequently conducted by experienced qualitative researchers who were not known to the UGRs.

Interview guides (see appendices A and B) were developed through reference to the literature in the field and consideration of the research aims and objectives. The focus of the interview guides was to present open-ended questions to cover the key areas of interest and to provide a degree of consistency in coverage of the key topic areas. Questioning began with some simple background questions about age, profession, year of study etc (as appropriate to the interviewee).

All interviews were fully transcribed and at that point all interviews were rendered anonymous and were coded (i.e. with the interviewee code). A short pause was indicated by: … in the text and emphases were underlined. Punctuation was added without altering the sense of the original interview.

For all healthcare graduates a summary of the key points from their interview was mailed to them, post-interview, to ask for their appraisal of the accuracy of the summary and to ask whether they felt there was anything further they would like to add or clarify.

Analysis of the findings

The findings, i.e. the interviewee accounts contained in the transcripts, were subject to thematic analysis, where a theme is described as a pattern found in the accounts (Boyatzis 1998). To move towards generation of themes, the accounts were firstly subject to coding i.e. a process of labeling a section of text with the researchers' chosen key words, a process undertaken word by word, line by line. These coded sections of text or 'units of meaning' were then sorted into a variety of indexed word files, allowing the accounts to be fragmented and compared across the participant group. The indexing, or grouping of similarly coded text, allowed the transformation of grouped sections of text to be more meaningfully refined, to generate a theme which would convey the essence of what the participants were saying. The constant comparative method was used to support this process of refinement (Strauss and Corbin 1998).

Findings and Discussion

Introduction to the findings and discussion chapter

For ease of interpretation and to allow the reader to make links between the respondents' words, the interpretation of these accounts and the evolving discussion points, the findings and discussion are presented together. Each theme represents a pattern found in the participants' transcripts and these are described before explaining the links with existing research findings and proposal of the significance and application of the findings.

There are four themes generated from the graduates' accounts and five themes generated from the undergraduate researchers (UGR) accounts. The graduates themes are presented first, followed by the UGR's themes.

Throughout this chapter quotations are used to substantiate and/or clarify theme description and/or theme explanations. Each quotation is labeled with the respondent's code number.

Codes for the healthcare professionals

Codes for the healthcare professionals are constructed in following way: Participant code example: GHCP_I1_AN_F_29

Explanation:

GHCP – graduate, healthcare professional

I1 – interview number 1

AN – adult nurse

F – female

29 – aged 29 years

Each graduate's profession is abbreviated in the following way:

- AN – adult nurse
- DR – diagnostic radiographer
- OT – occupational therapist
- POD- podiatrist
- PT – physiotherapist

Codes for the undergraduate researchers

As each UGR is a named author of this project, it is not appropriate to align quotations with their course of study and/or age, as this could compromise their anonymity. Each UGR is coded in the following way: UGR_I1, UGR_I2; Undergraduate Researcher, Interview 1, Undergraduate Researcher, Interview 2 etc.

Graduate healthcare professionals: sample characteristics

Ten former QMU graduates were recruited to the study. Sampling was purposive, aiming to recruit from the pool of graduates from 2009 or 2010 including representatives from each of the following professions: nursing; occupational therapy; podiatry; physiotherapy; diagnostic radiography; and therapeutic radiography (as these groups represented the cohorts who had experienced four years of undergraduate IPE within their respective programmes). Three males and seven females volunteered to take part, representing the following professions: diagnostic radiography (x2); nursing (x2); occupational therapy (x1); physiotherapy (x4) and podiatry (x1). The average age of the participants was 25.8 years (SD 5.1), age range: 21-38 years. Four participants had been mature students at the time of entry to their chosen programme of studies. Table 2 outlines the graduate healthcare professionals (GHCP) code, work status, work experience and year of graduation.

Table 2: Graduate healthcare professionals (GHCP) characteristics

Code	Work status and/or work experience	Other qualifications	Year of graduation
GHCP_I1_DR_F_30	Employed full time as a diagnostic radiographer in an acute hospital setting.	Science degree	2010
GHCP_I2_DR_F_21	Employed full time as a diagnostic radiographer in an acute hospital setting.	None	2010
GHCP_I3_PT_F_22	Currently unemployed. Has three months experience working full time as a physiotherapist overseas, in a sports physiotherapy context.	None	2010
GHCP_I4_PT_M_25	Employed full time as a physiotherapist in an acute care setting.	Certificate in science	2009
GHCP_I5_PT_F_25	Currently unemployed. Has five months full time, work experience as outreach coordinator overseas. Past work experience as a carer for children with special needs.	None	2010
GHCP_I6_POD_M_28	Employed part time as a podiatrist in a private practice. Past experience of working as a care assistant in hospitals.	None	2009
GHCP_I7_PT_F_22	Employed full time as a physiotherapist in an acute care setting. Past experience of working as care assistance in hospitals.	None	2010
GHCP_I8_OT_M_38	Employed full time as an occupational therapist in the social care sector. Past work experience as working as a support worker for people with learning difficulties.	Arts degree	2009
GHCP_I9_AN_F_24	Employed as an adult nurse in the acute care setting. Past experience as a care assistant in a nursing home.	None	2010
GHCP_I10_AN_F_23	Employed as an adult nurse in the acute care setting. Past experience as a care assistant in hospital settings.	None	2010

Key

AN – adult nurse DR – diagnostic radiographer OT – occupational therapist POD- podiatrist PT – physiotherapist	F – female M – male Number – represents age in years

All participants were either employed or had a minimum of three months, full time work experience in health or social care.

Graduate healthcare professionals: recruitment, interviews and respondent validation

A diversity of methods were used to recruit healthcare professionals e.g. snowball sampling, use of data gathered for the final year IPE conference event in March 2009 and QMU lecturing staff contacting former students known to them to be working. The latter method was the most successful.

All interviews were conducted by telephone, the calls being made from a private room at QMU. All calls were arranged at a time convenient for the professional. These were most often conducted in the evening and other times when the professional was not at work. All interviews were digitally recorded. The average length of the interviews was 23.4 minutes (SD 9.3).

Only four out of ten healthcare professionals provided additional information in writing, via their return of the respondent validation questionnaire (see Appendix C). All viewed the summary of their interview as accurate. All additional information was an expansion of a point already made in the interview.

Healthcare professionals themes

Four primary themes were generated from analysis of the health professionals' transcripts:

1. The realities of practice: working together is an essential part of patient care;
2. Reflections on learning together through pre-registration IPE: the process;
3. Reflections on learning together through pre-registration IPE: the products; and
4. Towards enhancement of pre-registration IPE: the graduates' views.

Each theme is presented with selected quotations and is followed by a discussion of how the findings relate other research in the field. A summary of the key points is presented at the end of the section.

Theme 1: The realities of practice: working together is an essential part of patient care

All interviewees recognised that working alongside other health and social care professionals, for the benefit of the patient, their family, carers etc was a key part of their day to day practice. The interviewees illustrated their response with examples of scenarios where professionals work together e.g. case conferences, ward working, referring a patient to another health professional and communicating this verbally or in writing.

> *We [physiotherapists] work, especially in acute healthcare at the moment, we work very closely as a multi-disciplinary team, with the doctors and the nurses, especially with the occupational therapists and discharge teams as well.. GHCP_I7_PT_F_22*

The professionals described interprofessional working at its best as times when it was characterised by those involved being respectful of one another, listening, working together for the benefit of the patient and problem solving together. It was noted that collaborative working was enhanced when those they worked with acknowledged that people had different perspectives and different skills to offer (that may benefit the patient). Some noted that effective collaborative working also makes the professional themselves feel they are doing the best for the patient at the centre of the care.

> *If you're working with a patient … it's sometimes nice if you're talking about their experience or their care pathway, it's nice to understand what they're talking about, 'cos you've got an awareness of other professionals and their duties to the patient. GHCP_I2_DR_F_21*

> *Every day, I'm working in a multi-disciplinary team. Every day I'm communicating with OTs and physios, the main people. Dieticians, most days. Various specialist nurses. So, for me, a really important part of my work is working in a multi-disciplinary team, so IPE has been useful in that I know what the role of an OT is, I know what to expect with a physio and that is really useful in approaching them. I feel more confident about approaching them and saying 'I've got this patient and they're having a problem with such and such' and knowing that the OT might have a different approach that might help them or if X might have more skills that I think 'if we refer you there then you're going to get more help through that way' so I think I can care for the patients more fully and more holistically.. that's really beneficial, not only to the patient but to me as well because I feel (I've cared for the patient more) and passing on work in an appropriate way, it's sharing the workload across the team, which is really valuable and useful. So in terms of IPE, it gives me confidence to go up to them and know what sort of things they can do for the patient. I think in*

terms of communication, that's an important part and being able to speak to them openly about patients using professional language. … I think it's really important that you understand the (roles) of each other otherwise it's just embarrassing and looks awful and it's a terrible reflection for the family of you're working as a team. I think that's really important that you are able to do that and IPE has definitely helped that. So, every day my work, team work and IPE has been an important part in preparing me for that. GHCP_I10_AN_F_23

It was acknowledged that team working in practice does not always work as well as it should. These situations were linked back to memories of occasions of poor team working practice in some IPE groups at University e.g. where there was unequal effort or commitment by some members of the team.

Some interviewees (e.g. the diagnostic radiographers and the podiatrist) perceived the number and diversity of other professionals they considered they worked alongside to be relatively limited. They commonly compared themselves to professional groups perceived to have wider and more diverse team-membership e.g. nurses and physiotherapists.

[In previous employment, as a podiatrist] I was working with other podiatrists and the only interprofessional practice would be saying when a patient came in and they were a healthcare professional, they would be coming for a specific service.. At the place where I am now, no, virtually no interaction with other healthcare professionals..I probably have to add that because I work in the private sector, it's really the low risk patients that I get to see because most of the people with high risk problems get dealt with in the NHS, so that should help explain [the limited] interactions with other professionals. GHCP_I6_POD_M_28

***Interviewer**: When I bring up interprofessional education .. what are your immediate memories? **Interviewee**: Probably negative ...I don't know if it really benefitted us that much. It just seemed like something else that we were to do. It always felt like maybe the physios, they probably worked more within a multi-disciplinary team, whereas radiographers just work with nurses and doctors as opposed to a range of other people. … I don't know if it's just radiography, if it's different say working as a physio but you just see your patient once and that's it. And you're just a small part of their care pathway. GHCP_I1_DR_F_30*

Theme 2: Reflections on learning together through pre-registration IPE: the process

Overall, professionals were positive about the value and importance of pre-registration IPE in preparing healthcare professionals for working life. This was in part linked to their view that they did work within teams in practice. However, there were mixed views about the depth and extent of learning linked to pre-registration IPE (this is expanded upon in Theme 3).

Across all participants there was a common theme about the processes or learning activities, formulation of assessments and IPE design that seemed 'to work', in terms of learning about each others' professions and showing how collaborative practice can ultimately benefit patients. There was also an expected parallel between the positive narratives around 'what works' and the more negative accounts of 'when it did not work' at University, ultimately linking with specific descriptions of what should change to improve IPE (expanded in Theme 5).

The learning opportunities that were associated with valuable learning were characterised by learning based on *real* case scenarios e.g. meeting and talking to patients and healthcare professional teams in the University setting. This was particularly true of scenarios where it was felt there was a good fit between the case presentation and the group membership.

> *I think in my third year, they brought a guy,. he was basically one of those patients who spends a lot of time going round the system and there's a lot of interaction with his GP, he attended [a clinic] to get his feet done for podiatry and interactions with occupational therapists, coming into his house and doing it up so that he could get equipment for activities of daily living. He'd been in and out of hospital so he had quite an intimate knowledge of how the system worked and I think that's where, what it said to me, is how this whole thing makes sense. ...I think it was actually just hearing it from the horse's mouth...it's one thing to read case studies, and to go to abstract theories and stuff on healthcare models, but to actually have someone who's going through the system, who the healthcare system actually affects...at the very intimate level, I think it puts things into perspective. GHCP_I6_POD_M_28*

The graduates placed high value on the time that was available to meet with others in their small, mixed student-professional groups, enabling face-to-face discussion. For a lesser number, the online interaction, via the Virtual Learning Environment (VLE, WebCT) was a useful place for sharing views and experiences of team working and related resources. Talking and/or exchanging views and listening were the most recounted and well preserved memories of IPE. For some, the contact with others was not always framed in a formal way, but the positive elements of contact were

related to an enjoyable, social element i.e. getting to know other students, as people, and finding out what they did generally on their course. Some were able to recall both positive and negative small group working experiences, generally noting that the most challenging group work experiences were in first year. Small group working experiences that were negative i.e. characterised by some not contributing or fully engaging with the tasks, was still seen (by some) as having value in preparation for what can happen in real life i.e. ineffective team working. Getting along with team members was an important part of IPE being a positive, learning experience.

It was good, if you had a good mix in your group. … Overall, it was [a] positive [experience]. For the group work, I usually ended up with quite a good group, so I felt like we ended up working quite well together and got through everything kind of in the way we were supposed to, which was good. .. Because of the groups I got, the communication was quite good. I think, had it been a different mix of people, I think it would have been a lot more difficult.. GHCP_I9_AN_F_24

I think maybe a lot of it depended on who was in your group and how well you all got on and what your approach to IPE was. I remember in second year it being, maybe because we knew more people across uni, it was more like, 'hi, how're you doing?', it was more of a social thing as well and certainly by third year, it was more a positive thing, meeting up and seeing people...so I think it did improve through the years. GHCP_I10_AN_F_23

I think the positives were certainly things where we did work as a group, and we did actually have sit and problem solve, 'what would we do with this patient, what would their care plan be, what would be the different things that we could do with them?' I think, definitely, the positives were that we did get to spend time with the other professionals, which otherwise we wouldn't have got to do. GHCP_I7_PT_F_22

I think certainly things where you had to work as a group, like when we had to interview the patient or interview the [NHS multi-disciplinary] team and then how to present...I think that was a lot more beneficial .. I think the discussions, as well, were really good. But a lot of the time, writing essays about stuff, I didn't actually feel that that was really helping necessarily our skills, our interprofessional .. skills, a lot of it...I think it was better to do stuff a lot more practically .. to spend a bit more time as a team, but I think in IPE, mainly we could do a lot more practical stuff, a lot more stuff where we were working together as a group. And also discussions as well, I think that's a very positive thing on WebCT [the Virtual Learning Environment], where we get to discuss each other's opinions. I think a lot more things like that and less stuff where we're (working) issues by ourselves. GHCP_I7_PT_F_22

Less mention was made of the IPE tutors' role in learning, but some highlighted that tutors who are motivated, who are knowledgeable about IPE and its aims, tutors who monitor and facilitate group working are highly valued and had brought a motivational element to the interaction.

A significant amount of interview text linked to IPE learning made reference to working on or towards assessments. Opinion was however divided upon the most valuable format of assessment, with the majority distinguishing assessments that were linked to group work versus individual work (e.g. an individual written coursework). However, there was consensus that tasks linked to small, mixed profession group work were valuable; negative views related to peer-marking for group work and having summative assessment marks linked to group work performance. The issues linked to the latter point relate to awards for group efforts not being fair to all (due to inequitable contribution).

Two graduates suggested that group work tasks should never be summatively assessed, with many others noting that when things were not assessed or deemed not be compulsory, then participation suffered, with the loss of benefits of a group approach to sharing views, etc.

> *The online discussions were worthwhile, but the administration of them and the running of them, .. I think there were definitely some flaws that needed ironing out because some people didn't take part in them at all and some people did a lot of work for it and some people had minimal input into it. It wasn't as if you really needed to read what other people were saying, you didn't have to put a lot of work in yourself if you didn't really to and I don't think a lot of people really embraced it. I think it could have been something really worthwhile but it just never happened. .. And I suppose it is sad to say that the majority of students are going to put more work into what they're marked on rather than what isn't marked. GHCP_I4_PT_F_25*

> *I think in first year, we did like group marking of each other in our groups and I thought that was a bit funny the way that was done, just because it was really uneven the way everybody worked. Some people (worked) much more than others and then it meant that everyone was getting the same but it shouldn't be like that. GHCP_I5_PT_F_25*

> *.. You always have this problem in groups, where people don't turn up or people are a wee bit lazy or whatever...and I think there were people, especially the mature students, when you've taken time out to do a course, and at considerable expense, it's a lot of time into your adult life as well, I was really attending college for myself,*

to better myself and to get a degree and I felt that having to depend on other people for a grade in some of the earlier years wasn't such a great idea. GHCP_I8_0T_M_38

Throughout all of the interviews, as the graduates reflected back on all of their re-registration IPE experiences, they noted a trend towards appreciating the value and importance of IPE as they were exposed to practice based learning or practice placements. For those who did not have practice exposure until level 3 (i.e. the physiotherapy participants), this was a significant disadvantage:

I think it's difficult because we didn't go out on placement until our third year .. I think you're mainly trying to get a handle on your own role [in the early stages of University] and it's only when you've actually been out on placement and done it yourself that you know what your role is within the team and I think then it lets you accept what are others' roles as well. I think that's what IPE definitely did, when we went out on practice, we could kind of put what we'd learned from IPE into practice, as well. … I think by the end of the four years, once we'd actually been out on placement and worked with the other health professionals in the team, and practically in a placement point of view, by the time it came to third and fourth year IPE, it worked really well together and we were able to problem solve .. so I think by the end of it, it definitely was very worthwhile, but I think to start with, it was quite difficult to see where it was going. GHCP_I7_PT_F_22

Those who experienced practice placements earlier still considered that more placement experience helped appreciate the possibilities for application of knowledge and skills developed through IPE. Also, being able to draw on experiences from placement (positive and negative) appeared to be an important element for IPE learning.

I think, as you went on to placements more...in nursing you're doing your placements from first year right through to fourth year, so you're progressing through it, really. I think after being in a couple of placements, you really see the need for multi-disciplinary teamwork, so you see the need for it and therefore you need to be learning about it and the value of it and you can see it being done really badly on some wards or some healthcare settings and in other places you see it being done really well and then I think that's what makes me go, OK, it's worth learning about and getting it right, doing it well rather than just being very frustrated by it. I think when people realised the need for it, their attitude to it improved. GHCP_I10_AN_F_23

Theme 3: Reflections on learning together through pre-registration/qualification IPE: the products

There was a consensus that there was valuable learning linked to pre-registration IPE, although for many (in particular the male respondents) the sub-text was that it 'could have been much better' (linked to Theme 4). All of the professionals noted that their knowledge and understanding of the roles and responsibilities of other health and social care professionals had developed through pre-registration IPE. This was directly noted to inform their post-registration practice and, for some, this increased their confidence in making referrals, in holding discussions with other professionals, in discussing experiences of care with patients. They noted their enhanced appreciation of role overlap, understanding of boundaries and, more generally, appreciating and valuing the skills and expertise that others can bring to patient care.

> *I learned more about the roles and the responsibilities of the different health professions, what you could do for patients and in what way I as a nurse could pull in on their expertise and things, to get the best for the patient, so I think that was [it], learning their roles and their responsibilities, that is it their duty is, as well as mine. That was really useful. GHCP_I10_AN_F_23*

> *I remember in second year we did presentations specific to each of our professions and audiologists were in our group and that was something that I'd never come across before. So that was quite good, to learn about what they did. HCP_I5_PT_F_25*

> *..from experience, from working now, IPE does give you an overview of the roles of different professionals.. GHCP_I4_PT_M_25*

Some noted that their communication skills were enhanced via pre-registration IPE, but this was commonly viewed as an adjunct to learning via other non-IPE modules and practice based placements. Such skills included improving their listening skills and practice at 'speaking out' or addressing others. A smaller number alluded to their improved capacity to take on board others' perspectives, awareness that other people can think differently about issues and working together to make decisions:

> *Obviously, it taught me a lot on the best way to communicate with other professionals and obviously the kind of processes that we use to communicate with other professionals and obviously understanding that somebody doesn't know as much about my profession as I do about theirs.. GHCP_I2_DR_F_21*

IPE, I think, a lot of it, a huge component of it, was decision-making, so being able to interact with these other professions with confidence and being more competent to then make a decision with these other professions. I think IPE was very good at showing that, whatever profession you were, whatever point you were going to make, was going to be invaluable to the meeting. That was quite a good part. And also being able to sit back and interpret the others' point of view. I guess boundaries as well, knowing exactly where everyone was and being able to appreciate everybody .. GHCP_I3_PT_F_22

It definitely improved my team working skills, working together to make presentations and especially when you're not on the same course as someone, you have to make more of an effort to communicate with them, to get a good presentation at the end of the year. GHCP_I2_DR_F_30

I think probably the main skills [learned] we things like listening skills and basic communication skills and knowing.. looking at everyone's different points of view as well. GHCP_I7_PT_F_22

Developing knowledge of the impact on team working of hierarchy and stereotypes was only noted by a minority. More prominent was the experiential learning linked to developing a proactive approach and resilience (especially in the face of a non-effective team working experience) to achieve the common goal. Students referred to the difficulties of dealing with those who appeared to have different priorities for learning and varied levels of commitment; also the need for leadership and commitment of the team members for effective team working.

.. it was just a bit of an inconvenience working with people [in University based IPE]who were difficult to work with, but from working now for a year and a bit, you meet people like that all the time when you're out working and knowing how to deal with that and to be as productive as you can, not to get bogged down and just get on with it and be as positive as you can, that was a good valuable lesson from IPE, I think and that was probably working in teamwork...if you had to do IPE by yourself, I think it would have been a complete waste of time whereas working as a team was definitely a positive side to it. GHCP_I4_PT_F_25

Reading through the graduates' accounts of their memories of IPE, there was a pattern of recounting difficult and emotionally testing experiences, followed by what they learned from that experience and how it connects with practice. The reflections on the negative and positive learning experiences evolved through the course of the interviews. When asked about any changes in perspective, with time and working experience, their reflections appeared to place the 'whole' of IPE in a more positive light than the initial elements of the interview. This was best summed up by the

podiatrist who had, overall, a relatively negative view of many of the components of IPE:

> ***Interviewer****: Do you think your views on IPE have changed?* ***Interviewee****: Actually, it may have changed slightly, because when I was a student, it was just one of those things we had to do. Actually talking to you right now, looking back and reflecting, I think it was a very positive experience, so there's no way of knowing how to interact with other professionals if we didn't have the IPE module, but I am certain with the limited interaction that I've had with other professionals, that it's definitely been a hell of a lot more positive because of the IPE and because I actually know what they're about and what they do. GHCP_I6_POD_M_28*

> ***Interviewer****: You mentioned that you had [working] experience before, do you think it [IPE] did actually help you prepare for working within teams and stuff like that?* ***Interviewee****: I think it did 'cos, even if there were conflicts, the time was taken to sort it out so that everybody was happy and although it doesn't always work like that in practice, it kind of gives you grounding to think, it's not just about what I want, you have to actually take the time to listen. So I think, from the communication point of view that really helped sort it all out. I'm not the kind of person that just wants it all my own way, anyway, but it's good to see it working in a group. GHCP_I9_AN_F_24*

Theme 4: Towards enhancement of pre-registration IPE: the graduates' views

All graduates had suggestions about how pre-registration IPE could be enhanced. The main suggestions link closely to the accounts presented under Theme 2, which represent a synthesis of graduates' views on what made interprofessional learning seem worthwhile, meaningful and enjoyable.

Increased use of real-world patient case data, or even better, the involvement of more patients and health and social care professionals was supported by the majority. Respondents stressed the need for involvement of medical students and other members of the multi-disciplinary team absent in pre-registration IPE at the University. This connected with the view that it was important that small group working continued, but the case scenario would be improved if teams more closely reflected the practice-based teams in terms of size and composition. In this way the learning would more closely emulate practice and the gains would be greater. Most students noted that the apparent withdrawal of some professional groups as IPE progressed through from level 1 to 4 was negative in terms of the perceived message of the relative importance or lack of importance of IPE to different professions.

I guess, at QMU we didn't have the benefit of any medics around so, again, it's just in the, last [practice based learning] setting when we really started to learn how to communicate with the doctors .. GHCP_I3_PT_f_22

..they've [social workers] obviously got different targets and budgets to work to. Maybe it'd be good to understand the role. I think that's the difficult bit, the social role, in terms of where they're coming from, their point of view...and if social workers could be involved in IPE, even if you had a visiting social worker to a lecture, that would be useful. GHCP_I10_AN_F_23

As practice based placements were considered a rich place for learning (in general) it was noted by several students that learning about interprofessional practice could be achieved through activities on placement or shadowing. Related to this, others suggested that case study would be a valuable route for learning, focusing on practical and transferable communication skills, again with the focus of the learning being closely linked to practice e.g. simulation of case conferences.

.. if there was a bit more of a purpose to the work, for the teamwork, if we could really see how it related to our professions and our working lives.... Maybe if it was taught more as a case scenario, more like discussions of how you would work through a patient's care as a multi-disciplinary team, set up multi-disciplinary team meetings in a real life setting and literally, 'what roles (would) each of us be taking on here, how would we be working through it?' And making it...a bit more real to life and useful and that you could really see it reflecting on our future work...I think that could work better. I think, quite often, again I go back to the poster [group work in Level 1] where people were, 'ah, why on earth are we making a poster? We'd never be doing this in real life, we'd never () in a team and make a poster with nurses, physios and OTs; reviewing a patient who had polio when they were six [years old] and people going 'we'd never do that' and we're pulling at threads, at straws, trying to think what would the nurse do for the patient, when actually, all they needed was the podiatrist. I think if they actually taught it through case scenarios and made it really real...that would make it less frustrating to people.. GHCP_I10_AN_F_23

***Interviewer:** any ideas for changes you would make, to IPE? **Interviewee:** As radiographers, we have to do a week working with the nurses and I know it's not something they could do at uni, but maybe on placements, you could have, like, a physiotherapist with the radiographers for even just a day or two, just to get an idea about what they do 'cos it's kind of hard to explain, or people just don't really get it until they see it. And likewise, maybe put a radiography student...it would be really hard to timetable and that, but even helping just a day with a physiotherapist or something like that. GHCP_I1_DR_F_30*

For those who noted a development in appreciation and applicability of IPE after exposure to practice-based learning episodes it was suggested that IPE should perhaps only be integrated in the later stages of the degree programme. For others, a related issue in favour of a later start time for IPE was the general deepening of knowledge and understanding about what they *themselves*, as a professional could contribute to team working. The uncertainty about professional identity was considered a barrier to fully embracing IPE in the early stages as it linked with confusion about how learning with and from others (in different professional groups) could happen when they did not really understand their own profession. The pragmatic view taken was that if IPE was to continue for all levels then the importance of IPE and the relevance for those students had be very clearly explained:

> *To begin with [in University based IPE] we were all wondering, 'why are we doing this?' Surely we all know what a physio does or an OT does, but I think maybe we just needed a bit more motivation, a bit more encouragement at the beginning. I don't think they really told us enough about IPE and what the outcome of the module was, what we were going to gain from it. I think we weren't just (driven to do) enough at the beginning to really appreciate what the module could do, why... GHCP_I3_PT_F_22*

> *I think just [needs] to be more clear about what it is that IPE achieves in the clinical setting.. GHCP_I3_PT_F_22*

Difficulties related to finding times to meet up (allowing for different students having different placement and timetabling schedules) linked to suggestions that more time timetabled together was necessary. On a similar line, time for depth of study had to be accommodated by more careful attention to how the IPE module assessment and activity related to non-IPE modules. Some noted apparent 'clashes' of significant learning events meaning there were tensions between workloads for several modules. A few were critical of the depth of material covered, viewing it to be insubstantial and lacking challenge in contrast to similarly weighted modules.

> *I think in fourth year, it's stressful 'cos of everyone's dissertations and then we're doing IPE, it was just seen as, 'why are we doing this, we don't have time'. That was kind of the feeling within the tasks, I would say. Not just me, I think everyone kind of felt the same. GHCP_I1_DR_F_30*

> *...some of the members of my group were nurses and they were away [at a different campus site], so it was very difficult to get people together to get stuff done ...it was just trying to coordinate to get everyone to pull their weight and then get the stuff done. ; I moaned about it, I'd say it was negative. Again, 'cos you had very limited*

allocated blocks for IPE, within your calendar .., but apart from that time when everyone got together solely for the purpose of IPE, there was virtually no time allocated for it. ... The amount of hours you had to put in as well, after [working] hours. … I think to try to allocate more specific time that students could actually get together for IPE.. GHCP_ I6_POD_M_28

It was quite hard to, even meeting, getting everyone together [in their small IPE group at University]. .. the logistics of trying to meet up at the same time, with different timetables and people on placement.. it was quite hard to juggle. GHCP_I1_DR_F_30

It was suggested by a few that the IPE tutors could be more engaged with the topic: more knowledgeable about the aims of the IPE modules and knowing more about the group members they were working with. One interviewer followed up the graduate's comments about the IPE tutor not appearing to be very knowledgeable about radiography:

Interviewer: *If you were to give advice to tutors .. about how to approach IPE and these mixed groups, what would you say to them?* ***Interviewee****: I suppose, be aware of who's in the group and what they do. I think I remember that from second year, we had to do a presentation and the actual tutor, she seemed like she really had no idea what radiographers do, so it was a bit...I could have told her anything. So if the tutors are like that, the students are going to think...the tutors lead by example... I think it does depend on the tutors a lot ..* ***Interviewer****: So what is it that the best tutors do that the others aren't doing? They made it a bit more interesting. I just remember one of the tutors who was good, he was a nurse, I think he probably talked about his experiences and it just kind of made it a bit more real. About working as a team so you kind of realise that it was quite important to work as a team, 'cos he was relating it back to when he worked. GHCP_I1_DR_F_30*

On the issue of assessment three students suggested that it would be a positive development if summative assessments were not ever dependent upon group work or if the mark linked to group work was a relatively small percentage of the final, individual grade. Two of these students had given accounts of difficult working relations in some of their small groups:

I think the group work tasks are fantastic provided there's no mark attached to them. As long as your degree classification ain't gonna depend on a piece of group work, I think that's fine. . I think that IPE certainly achieved making people aware of the challenges they faced in group working and teams. There's no doubt about that, but when a mark is involved, that's when I've got a real problem.. From a teacher's

point of view, from an educator's point of view, I can maybe see that if they're going to succeed in trying to resolve team issues, then maybe a mark should be involved, but that's a wee bit unfair when people have taken time out and a great time and expense and then maybe their marks suffer. That's my one worry, as a result of being in part of groups. IGHCP_I8_OT_M_38

This student had a more complex idea, where marks given for group work might be staged, as greater expectation of effective group working skills are warranted:

I think that was a big problem in terms of how IPE is marked and things like that, as well. Yes, I think it was quite a difficult module to mark with group work .. definitely that was a really frustrating point for people and something that made them go 'argh, IPE, a rubbish module' because of that frustration in that they could put in their best and then get a rubbish mark from poor group work and stuff and then, on the other side, I think, it got to second year and people felt like, 'well I'm not going to bother nearly so hard because what's the point if other people aren't going to bother and you're going to end up with a rubbish mark?' ...Maybe a small percentage of the module could be marked on group participation and contribution to the meeting and things like that. I think it's a difficult one because people always feel like if they're a shy person, they're not going to speak up, and be penalised for their personality and actually, I think when you reach third and fourth years, actually if you're in the health profession, you can't use that as an excuse when you're a professional. You have to be able to talk in a group. You have to be able to speak to your patients. You have to put your point forward. So I think, come third and fourth year, people could be marked on their contribution to the group in terms of the discussion and things like that because they need to be able to in the working world, so that may encourage them, may push them forward. Believe it or not, I'm actually quite a shy person, and it took an awful lot for me to start speaking in third year, but, you just sort of realise that actually, I'm going to have to, as a professional, and you do.
GHCP_I10_AN_F_23

Discussion of the healthcare professional themes

Interprofessional working and varied perceptions between professional groups

Similar to the findings of Pollard, Rickably and Miers (2008) the former QMU students, now healthcare professionals, were able to talk freely and in a knowledgeable way about the nature of their interprofessional practice. In their accounts of practice they did refer to the connection between effective collaboration and the enhancement of patient care, but some also extended their explanations to present the positive impact upon their own sense of worth, as a professional, doing the best for the patient at the centre of care.

Interestingly, the podiatrist and diagnostic radiographers who were interviewed alluded to their requirement for interaction with other healthcare professionals as being more *limited* or *contained* in contrast to others (e.g. making comparisons to physiotherapists or nurses). MacKay (2002) noted that radiography students were least enthusiastic about IPE but suggested this may be related to the compulsory nature of the studies for this student group (in contrast to other student groups) in that particular University context. But Johnson et al (2003) also found diagnostic imaging students and radiotherapy students to report that they felt 'overlooked' within IPE activities in University, with some imaging students noting it was not relevant to their practice. In a more recent study Forte and Fowler (2009) presented contrasting quotations from occupational therapy students and diagnostic radiography students regarding the same sessions. The latter commented on those IPE sessions as, 'Too much group work' and 'Sessions dragged', in contrast to the OTs comments, 'Enjoyed it', 'Time went quickly'.

Clearly it is not appropriate to infer from this relatively limited pool of research that there is a significant difference between these student groups perceptions of the value of IPE to learning and professional practice, but it does highlight that perhaps some groups of students (and professionals) believe that the learning linked to IPE is more useful to some than others. Ironically, in this study, the podiatrist and the diagnostic radiographers did present fairly extensive accounts of the different professionals they did interact with, and it is this element which may be of value to highlight to students from these professions who are doubtful of the value of IPE.

A secondary point linked to these findings is the recommendation, where possible, for researchers in the future to consider diagnostic radiographers and therapeutic radiographers *separately* in data collection and/or analysis, to allow further exploration of the relationship between professional grouping and views on the value or relevance of IPE and interprofessional practice.

Learning from pre-registration IPE and ways to enhance that learning

There are relatively few studies of healthcare professionals reflections on the value of their pre-registration IPE experiences i.e. Reeves and Freeth (2002) and Pollard, Rickably and Miers (2008). However, there is consistency in the findings from these two studies and this research which suggests that the professionals do place a value on the knowledge and skills learned through pre-registration IPE and consider them to have supported their interprofessional practice. What is notable is some of the accounts is reference to learning 'in-spite of IPE', in the cases where negative experiences of group work provided some kind of learning platform i.e. learning how to be proactive and resilient in the face of team members who were not engaged with the task. Moving to examine the suggestions for enhancement of IPE the professionals recount difficulties with having to schedule evening meetings, not enough time to meet, in some cases a lack of meaningful tutor facilitation, feeling a lack of direction and little support to help them resolve team dysfunction. These difficulties of group working have been reported in the literature (Hammick 2007, Forte and Fowler 2009, Thompson 2010) and this study serves to highlight again, the complexity of designing and organizing IPE, whilst stressing the creative and constructive feedback which can be gained from those in practice.

The professionals were able to provide suggestions on modification of assessment approaches, promotion of tutor engagement with IPE, embedding IPE within the practice setting and ways to enhance the sense of relevance or applicability of University based IPE. The value of these suggestions lies in the currency of the practitioners knowledge and practice and their capacity to recall and reflect on the meaningful and less helpful learning experiences linked to IPE.

Undergraduate researchers: sample characteristics

All seven of the student-researchers who took part in the research study (i.e. gathering and analysis of the data from the graduates) volunteered to conduct individual interviews. All students were female and their average age was 24.7 years (SD 3.5), age range: 21 – 29 years. Three of the researchers were mature students, two with pre-existing health care qualifications. Six of the seven had past and/or on-going work experience in health or social care roles. Three of the students were in level/year 3 of their studies at the time of involvement with the study, the rest being in the final year of their BSc (Honours) programme.

Undergraduate researchers: recruitment and interviews

All seven volunteers responded positively to a University Moderator email message which asked for volunteers from level 3 or 4 from the following pre-registration programmes: nursing; occupational therapy; diagnostic radiography; therapeutic radiography; physiotherapy; and podiatry. The message generated many responses from post-registration healthcare students as well as pre-registration students. Eight students were provided with information about the study and a preliminary meeting was set up at the University in the evening to present more information about likely time commitment, study outcomes etc and to address any questions. Only one student had to withdraw from participation, due to conflicting work commitments. There were no volunteers from the areas of podiatry or diagnostic radiography.

The individual, semi-structured interviews were conducted by telephone at a time that was convenient for the undergraduate researcher (UGR). All students had consented to the interviews being recorded. All interviews were conducted by an experienced qualitative researcher who was not known to the student researchers. The interviews lasted between 15 – 44 minutes (average 28.3 minutes (SD 10.6).

Undergraduate researchers themes

Five primary themes were generated from analysis of the undergraduate researchers' transcripts:

1. Multiple motivations for engaging with the IPE pilot study;
2. Developing valued research knowledge and skills for future studies and practice;
3. Factors that made the pilot project successfully 'fit' with other studies;
4. Viewing pre-registration IPE differently: a more comprehensive and positive outlook; and
5. A diversity of ideas to galvanize future engagement with IPE.

Theme 1: Multiple motivations for engaging with the IPE pilot study

When the UGRs were asked about what led them to volunteer to take part in the project, all seven highlighted an ambition to *experience* and *learn* more about research. In particular, the students noted the perceived added-value of taking part in a 'real' study, i.e. something that could potentially be published and contribute to making it better for future students. Students contextualised their desire to learn more about research by making reference to their own, specific, research knowledge and experience garnered from their degree programme. Most perceived they had gaps or deficits in their understanding of research in addition to a lack of practical experience of carrying out data collection and analysis. Some highlighted that they had experience of quantitative, but not qualitative, methodologies. Others noted that they wanted this research exposure to deepen their knowledge and cultivate some associated practical/transferable skills e.g. interviewing technique, data analysis. For the students who had not yet progressed to dissertation work, they hoped that this experience would benefit them when they tackled their final coursework:

> *It was actually just getting the practical chance of doing it [research]. We have a research skills class but within the class [but] you don't get to do research, you just talk about it. You're taught about the different types of research and then you write essays on it, but not actually doing research in itself, it makes it a bit more difficult to write about it. I thought, for my fourth year dissertation, you actually have to do a research proposal, I thought this might help me figure out how to write that in a better way, having the experience there of how to actually do research and what you need in behind it. … if otherwise you've only learned about it in theory, it can be quite a shock to actually try some in practice, I think. And see what actually goes in behind the scenes. UGR_I6*

One student noted that she wanted, in a more general way, the opportunity to have a positive experience of research in light of past learning experiences linked to research:

> *I volunteered, basically, just to get a bit more experience in research because...other modules for research, it wasn't one of my favourites, so I thought...having a bit more insight could help with that and ... improve my outlook on research. UGR_I2*

Five of the UGRs explained their hope that involvement in the study and the experience gained might be positive in terms of making them stand apart from other graduates who would not have had this experience and who may not have demonstrated the initiative and efforts of getting involved in an extra-curricular activity. In this way they noted their CV and/or profile might have the necessary edge when seeking employment.

> *I had some ownership over it, and it really gave me an experience that my other classmates weren't having which was something...you know, normally you do everything together whereas this was something I was doing by myself which made me a bit more motivated and it gave me a bit more responsibility and I really enjoyed that part of it, as well, but it was something that was extra, on top of what everyone else was doing. UGR_I2*

Only one student spontaneously articulated their primary motivation as an interest in understanding more about IPE, in particular, why some students did not seem to engage with the related learning and how it could be enhanced for future generations. When the UGRs were asked if the topic of the study held any particular interest two said it did not (although once they were immersed in the project this view changed) and five explained that they were curious to find out how healthcare professionals viewed the usefulness of IPE, looking back, from the vantage point of practice:

> *I kind of wanted to get a better understanding of what people get out of it [undergraduate IPE] .. and particularly to see how it's affected people who've already graduated, whether they'd found benefit from having done the subject. UGR_I5*

This quotation is representative of the mixed motivations of the UGRs:

> *I wanted to do this IPE project to gain more skills, … skills that were involved in qualitative studies because I had no prior experience of that before, especially to do with data collection, interviews and interpretation of the data, that was really why I wanted to do the IPE project. .... There is a lot of competition for jobs, and people who stand out are those who do additional things, and I thought that the IPE project would be something positive in that respect and would look good on my C.V.. ... I was quite curious to know what previous students thought of IPE, whether we shared the same opinions or was the fact that they had started work had changed their opinions of IPE? .. I just wanted to know how does that [pre-registration IPE] relate when people start to work, what really happens in practice, are they able to take what they've learned and apply it? UGC_I3*

Only one student specifically identified the desire to be involved in a project that could ultimately benefit patients.

> *I wanted to be involved in an activity, to get out of my own routine, to do something which can benefit others, that was my main interest. … My main aim was to do something in my last year like to volunteer or [do] something and to help others. UGR_I10*

Theme 2: Developing research knowledge and skills for future studies and practice

All of the UGRs presented a positive account of taking part in the research process, describing it as both enjoyable and interesting. The UGRs' immediate recollection of learning was linked to data collection and data analysis, specifically how they had learned to develop their interview skills and the challenge of conducting telephone interviews. Further, how to approach the analysis of multiple transcripts and 'lots of data' and move toward theme generation. Learning also related to practical and organisational issues: data storage, use of digital recorders, scheduling and coordinating interview dates and times.

> *The first skill I learned was the interview. I had never done an interview before and I think, in a qualitative study, there are many possibilities of being biased in some way or other. It was really about being as impartial as possible, trying to be very precise when asking questions and trying to not influence the interviewee...What I learned with the data collection was more to do with when we get a lot of information, how do we move on, to take the meaningful part of it and how to interpret it, break it*

down into different themes. That was something that I learned because I didn't do that in my Honours project. UGR_I3

The important thing that I learned was about how to carry (out) the research … the importance of testing the instrument [recorder] before the interview. I didn't know how to use the recorder before and how to save the recorded [file] .. into the computer system and I gained some confidence. Although I did just two interviews, for the first interview, I wasn't quite confident, but the second one, I was much better than the first one. UGR_17

Some students listened to others' interviews, to hone their interview skills.

.. there was a couple of people that I listened to their interviews, before going in [to her own interview] .. to steal some ideas on how they ask questions <laughs>. Absolutely, or [find out] what's an awkward way of asking a question, that's not very fruitful ... ..how to get the best answers from the person and things like that ...and know how to go in and pick out the bits that they've said that are important, rather than letting things slide by, that you don't know [or understand] and afterwards you think, I should have picked into that a bit further.. UGR_I6

The UGRs also noted that it was valuable to gain an insight into the challenges and unpredictable nature of research. For example, the difficulties recruiting participants, failed calls to participants (i.e. the participant not being contactable at the prearranged time for the call), failing digital recorders, the need for flexibility in accommodating the participants' schedule and the challenges of completing data collection to a predetermined deadline.

.. I think I appreciated how time-consuming and difficult collecting data is. And just how time-consuming the whole project is, as well. … Yes, I think I learned new skills, good experience doing interviews on the phone and trying to make sense of all the data that we did collect, as well, trying to help in teams, sorting all the data into categories and themes... UGR_I1

Theme 3: Factors that made the pilot project successfully 'fit' with other studies.

The UGRs reported that they had found the project interesting, enjoyable and enriching in terms of learning about and developing research skills and they felt a sense of achievement from doing something additional or extra, in tandem with other studies. They noted that they were conscious of taking on something extra, in particular at an important part of their degree.

When they were asked about how they had managed to integrate the project with their studies and, for some, paid employment, they noted the following points to be of particular importance:

- That the level of involvement was deemed to be manageable alongside their other studies and commitments;
- That there was flexibility to dip in and out of the study at times that suited their studies and placement activity;
- That there was a coordinator, planning and aligning interviews with free time that the UGRs had identified at a site that they could easily access;
- That all information (e.g. transcripts) and progress reports about the study were available on a secured site, for ease of access for those at distance;
- That there was mutual respect between the principal investigator (PI) and the UGRs regarding work/life demands and the progress of the project.

At that time, I was at the university and I thought that, being in the evening,[project contact time] so I thought, why not? Because doing something outside the university degree is impossible [otherwise] because of my other academic work so I thought doing it at the university and if it is related to where I study, it would be much easier. I don't have to travel.. UGR_I7

I was aware that this would be extra work for me, but I tried to manage my time...so it was a little bit of extra work, but I didn't struggle. … I think it was quite suitable for us [as co-researchers], especially in fourth year when we'd got the honours project and other modules and we could do work by distance or by email. ... I managed it quite well, I didn't really struggle, so I think the layout [of the participation requirements], the way it's done is quite good, actually. UGR_I3

***Interviewer:** Did you find that it fitted in OK with your other studies at the time?*
***Interviewee:** The [principal investigator] was always quite flexible with when we could meet up with her...and there was another girl from my course who was involved in it as well, so I found, between us, we could always find times that were appropriate to meet up... Yes, it was always quite well organised in that way, that it fitted around our own schedules too. UGR_I2*

...I was quite proud of myself that I was able to juggle that along with a part time job and my whole degree. I feel that I did manage to stay in touch quite well.. UGR_I4

Theme 4: Viewing pre-registration IPE differently: a more comprehensive and positive outlook

Prior to involvement, the UGRs held mixed views on pre-registration IPE. Some felt relatively ambivalent and others somewhat positive, although many could recount specific, negative events linked to IPE, e.g. experiencing varied contributions from group members. They had all experienced, and continued to experience, IPE throughout the duration of the research process. As a minimum, all had completed two years of IPE at QMU. As an interest in IPE was not the primary motivating factor in taking part in the project, it was noteworthy that the majority of responses to 'what did you learn?' related to their changed perspectives on IPE. All students noted that their view of IPE had positively changed, to varying extents, as a consequence of taking part in the study.

The UGRs explained that they felt they better understood the connection between IPE and interprofessional practice, that they could now appreciate that there was a link, and that there was a relevance to patient care. Students were struck by the amount of discussion that healthcare professionals dedicated to explaining who they worked with, day to day, and the professionals' knowledge of team working and of others' roles. This realisation was linked with an invigorated view that pre-registration IPE was valuable and that all students should embrace the opportunities it affords.

> *I think learned more about how IPE is an important aspect when working in healthcare and most of the graduates that were interviewed acknowledged that. I also realised that not all disciplines experience the same extent of interprofessional practice in their work and that really depends on where they're working and the work ethics there, the mentality and well what other professions know about each other. Again, I realise now with hindsight, that IPE really holds its value in my undergraduate course and I think it should really be integrated in all healthcare professions and degree courses and just because it is really important and it does give us this foundation that we have and then when we go on practice we can build on that. I think I didn't realise it as much before, but now I see it as...you know, subconsciously before, I think students would tend to think of IPE as something extra, but when I really think about it now, I don't think that any more .. that's the thing that's definitely changed for me. UGR_I3*

One of the students, who initially appeared least positive towards IPE, recounted how the experience of the project impacted upon her most recent placement experience:

> ***Interviewer:*** *Do you think, having now been involved in this project, that your views on IPE have changed?* ***Interviewee:*** *I think they have, in a way, yes. I can see more, now, the positive sides of it, in that it does link in a lot with what happens when you're working. … Before going in [to this project], I didn't personally think it was too great. It has changed my view of it, so I think it would change others'. Because you're doing the course and you're doing the module, your views [are] on finishing the task and getting it over and done with and passing it. Whereas doing the research into it, you're going to a deeper level of looking into it and seeing the reasons behind it being used, and how it's organised and why... It's not just a random module that's sort of thrown together and [someone] thought, 'we'll use that for healthcare' or 'just take up one of the spaces on the calendar'. But, no, it actually has a reason behind it and I think it was my placement this year, that I noticed that I could use things that I'd learned from IPE, the MDT worked really close together. It was in mental health, it was just the way that the team … they all worked really closely. … It was an area that I hadn't seen working like that before. It hit me one day, yes, this is what IPE is meant to be showing us. UGR_I6*

The UGRs were able to very accurately recall actual anecdotes from the professionals' accounts, in particular ones which seemed to resonate with things they had experienced or heard peers talking about.

> *..a lot more positive now I can see...how it's more () than just more a module to me, whereas before it was more just about the grades, but now I appreciate a bit more what it's about and what we should be actually achieving from it and what it can actually bring to practice. But it's shown me a lot more of the negatives as well, of people who've also found that it was a waste of time or just extra...but I personally appreciate it a lot more now and...next year it will help me a lot more to be more motivated when I'm doing IPE. UGR_I2*

> *I think they've [my views of IPE] definitely changed... it's not something that's really been explained to us in terribly positive terms in our curriculum stream, I think it was good for us to see a more positive side of it, especially what the graduates have got out from it at the end. It's proven it to be of a lot more worth than perhaps it was expressed to us [by tutors]. … I think it's helped me to understand a lot about IPE itself and I think it's helped my attitude to be a lot more positive towards it, certainly. UGR_I5*

The process of reading and re-reading transcripts and reflecting on other people's accounts of IPE and inter-professional practice appeared to enable reflection on their own views and extended to review of their own learning and actions/inaction in IPE (past) or plans for action (the future).

> *.. now I'm thinking about it, having listened to others talk about what roles they knew about, it really questioned, about, what I knew about, what I had learned from IPE itself? And what I knew about other people's roles and did I know enough? Did I actually use IPE to its full benefit? And when I look back, I do think that I didn't embrace the opportunities that IPE gave to me enough. That was one thing that I did feel, I regretted the time that I had with the other professionals, I felt too shy to go actually, what do you <u>do</u>? I realised that's something that I'd really wished that I had done.. UGR_I4*

> *I appreciated IPE a bit more and [I had] a bit more in-depth knowledge of IPE and why we're doing it. And I think when doing all the interviews, people did have negative opinions, but once they'd actually reflected on IPE and what they did, I think they appreciated how much they actually learned and how important MDT working is and the importance of IPE. I think it highlighted a lot of things that maybe I was thinking myself, but you don't really get the chance to reflect on modules like we have in this project. Even with our whole degree, our whole course, we don't really look into each module and analyse each one, why we did this, what we learned from it and everything, apart from maybe a module feedback for each one. It doesn't give you in-depth reflection on what you've learned as this project has. But I don't think my opinions have changed, probably just appreciated it more. I've realised what I've learned, as well. UGR_I1*

> *..[I am] a lot more positive now, I can see...how it's more .. than just more a module to me, whereas before it was more just about the grades, but now I appreciate a bit more, what it's about and what we should be actually achieving from it and what it can actually bring to practice. .. I personally appreciate it a lot more now and...next year it will help me a lot more to be more motivated when I'm doing IPE. UGR_I2*

Theme five: A diversity of ideas to galvanize future engagement with IPE.

Each UGR presented ideas about how they felt the findings from the healthcare professionals could be used to advance the development of undergraduates' ability to work together and learn together effectively, for the benefit of patients. All UGRs believed that it would be advantageous to reveal or expose the research findings to the undergraduate healthcare population, to reinforce that:

a. Interprofessional collaboration is a part of everyday working practice for all healthcare professionals and it ultimately benefits patients; and

b. Pre-registration IPE, as experienced by former QMU students, did play a part in the development of those collaborative skills.

The strength of these convictions seemed, in part, to be linked to the openness of the professionals to discuss not only the positive, but also the negative elements of their IPE experiences. The professionals' accounts of the acquisition of knowledge and skills related to interprofessional practice, because of *and* in spite of some of the challenges they experienced, appeared to add to the credibility of their points.

The UGRs generally held the view that if students were exposed to these accounts, in some format, it might help students understand the potential value of IPE, engender positive attitudes toward participation, help reaffirm the aims of the module through examples of use in practice and ultimately help make learning together more enjoyable and effective. Some UGRs were of the opinion that exposure to the findings could have a positive impact. This could be either through contact between the students and former students (now healthcare professionals) via hearing the messages from the professional themselves (face to face) or via reading materials linked to this study. Three UGRs thought that it would be a good idea to enable other students, in future years, to experience what they had experienced – as a means to help them more fully understand IPE and the relationship with interprofessional practice. Others felt this piloted approach may be possible, but not entirely necessary, to get the message across to the undergraduates.

> *I think the benefits that I've had are just from the contact itself [with the healthcare professionals], so it could have been done other ways, using email or face-to-face meetings or whatever, but I think the outcome would have been the same regardless. It's just the information that's being imparted that was really helpful. No matter what way it could have been done, as long as that contact was there, it would have been the same outcome. UGR_I2*

> *I think that the outcomes of the study would be very beneficial to pre-qualifying students. I think if they read the findings of the study, they would appreciate more*

the value of IPE and what it's worth when people start working. … because many of my views have changed after doing this project [through the experiences and findings of this project]. I think it will inform pre-qualifying students, on the nature of IPE, on the idea behind it and how it relates, really, in practice. I think it will help in that respect as well, it will be very useful. I think the recommendations made by the graduates may be something that could be looked into. Things to do with different ways of assessment and addressing the module in a different way, just to make it a bit more interactive, a bit easier to handle, the logistics of teamwork, easier to meet up or things like that." UGR_I3

The latter quotation captures the actions that the researchers as a whole believed should now be taken, by University tutors, to address some of the issues what were raised by the professionals. For example, resolving difficulties with timetabling, developing more realistic case studies, maximizing practical, small group activities etc.

I'd like to think that the changes that were suggested by the guys [healthcare professionals] that they are seriously considered by the people that are setting up modules...module coordinators because I think they are valid points. … But also, I'd like to think that maybe it would have an effect on students themselves actually believing that it is important and it's worthwhile doing. I'm really not sure how you get that message across any better than it has been done in the past. I know that's one of the aims of the research.. I suppose if you've got research, graduates have said it has improved patient care, then realistically, they can't ignore that, the evidence. But then some critics might go, there's only ten people in that study, out of the whole of the UK .. .I don't know, maybe for the QMU students, it will have a real relevance because QMU drives it, maybe it will have an effect on our university, at least. UGR_I4

Taking a broader view on the application of the study findings, a few researchers suggested a need for fuller understanding and advocacy of the benefits and aims of IPE by all healthcare academic staff and, in particular, IPE tutors to ensure that appropriate messages were conveyed to students throughout their student-tutor interactions:

.. the attitude of some of the staff...could be a little more positive, I think. Those of the staff that aren't involved with IPE, I think, could maybe know a little bit more about it so that they would be a little bit more positive, 'cos I don't think it helps the attitude of the students when some of the teachers are being rather negative about it as well. … I think the problem is that a lot of academic staff haven't been really shown the value of IPE and if they haven't been shown it, then obviously they can't show the students the value of it and nobody gets and it and I think that's quite frustrating for everyone. UGR_I5

The interviewee continued to present different ideas, proposing that reflection on interprofessional practice experiences would promote the connection between University situated learning and the current workplace.

> *Obviously, as part of your CPD you have to reflect on the work you're doing...maybe if part of your CPD was to reflect on how you've worked interprofessionally rather than just how you've worked yourself? Even if it was just a small part of that, it might be helpful to some people, I think. UGR_I5*

In a similar vein, another researcher had an idea that students could explore the views of practice educators when on placement, to do their own investigation of the value of IPE.

> *Maybe, If it was made of part of placement outcomes, or something. You should actually directly ask the qualified practitioner, or other people on placement about how they found IPE, because as the years go by, more and more people will have done the module and they will have their own opinion on it. So maybe it's a matter of getting students to do that once they're out on placement and then you bring that [back] in [to University]. UGR_I4*

Only three students felt it would be a good idea to allow other students to experience the same process that they had been exposed to:

> *For other people to have the experience that I had, I think would be really beneficial and allow other people to reflect on IPE a bit more, on the whole module and how it all works and getting other people's opinions as well. I think it is really beneficial for others, to maybe change people's opinions about IPE as well. I think you've got the problem of going to do a module like this, this way, if you don't like IPE, you might not be that interested in it. For those people, it may be the most beneficial. UGR_I1*

The UGRs demonstrated forward thinking, and noted that implementation of any changes proposed by the healthcare professionals would require exploration of the impact of those changes. For example, would telling the undergraduate students about the importance and applicability of pre-registration IPE actually have an impact upon engagement with the learning activities?

> *That would need to be investigated, to see whether having graduates stand up and explain how [pre-registration] IPE has influenced them, that would be research of its own to do that, because it might be the same as a [university] tutor standing up at the front [of class] and saying that. Because students aren't really in touch with their profession at that stage [level 1] .. IPE is all about teamwork and although it's really important to actually realise the importance of the module itself... you can't lose*

focus on the fact that it is all about teamwork and practising teamwork itself is really important, so not just realising the importance of the module but actually taking part in teamwork. UGR_I4

Discussion of the undergraduate researcher themes

Motivated student researchers: IPE champions of the future?

The interest of the student volunteers in learning more about and experiencing 'real' research was striking, with every student noting this as their primary aim. Linked to this ambition was the possibility of enhancing their performance in their final year dissertation and/or seeking to make their CV stand out from the rest – all of which may be related to aiding success in finding employment. What was interesting was the lesser lure of the topic i.e. the study of pre-registration IPE; at most this could be said to be closer to *curiosity* than any significant driver to participate.

Hoffman et al (2009) interviewed 69 volunteer students involved in IPE initiatives. They examined what motivated students to take part and found that there were several key factors, all equally mentioned: motivation to be involved in something that may improve patient care, and an equal number drawn with the view that it may advance their careers (self interest) and learn more about the issue. In this regard there are parallels between Hoffman's study and this, in that there can be multiple motivating factors, with commonality of the desire to potentially advance career prospects.

Knowledge about what appeals to student to take part in initiatives linked to educational and professional development is valuable. The role of 'IPE champions' is commonly discussed in the IPE literature – often referring to educational leaders in the field (Barr 2009). However, student leadership in IPE should not be underplayed. Hoffman et al (2008) argues for the critical importance of student leadership in IPE, highlighting the role it can play in its sustainability. Examples of entirely student led IPE initiatives are apparent, for example, the activity of the Canadian based National Health Sciences Students Association (NaHSSA, http://www.nahssa.ca/en/gateway). This group, established in 2005 aims to promote IPE in practice and education, as well as nurturing the IPE student leaders of the future.

Despite a primary motivation to learn more about research, each UGR appeared to become progressively absorbed in the IPE topic, their thoughtful and complex explanations about the potential uses of the data exemplifying, perhaps, a new found interest in the topic. A product of the pilot study may be learning linked to student recruitment and supporting the process, in a way that allows students to cultivate an interest in this complex area.

Helping the process 'fit' with concurrent studies, enabling the development of research knowledge and skills

All of the UGRs were novice qualitative researchers, with little specialist knowledge or experience of issues related to development of an interview guide, interviewing, recording data and interpretation processes and cycles. Yet, despite this, the quality of their interaction with the health professionals and capacity to interact with the data and see emerging patterns, and at times, contradictions within the texts was good. In addition, the core team of seven remained for the duration of the project, managing the project work alongside other academic commitments. So, how was this achieved?

Initial face to face meetings with the group proved to be problematic. In a scenario which mirrored the discussion points made by the professionals about IPE, there were difficulties due to the UGRs and the PI having opposing timetables and commitments, placements at distance and part-time work, all acting as obstacles to meeting as a group. It was quickly apparent that an online communication system was needed; a password protected, secure, virtual environment for the team was created. This offered a place to present project updates and links to relevant literature, to hang documentation about the analysis progression and the development of interview schedules etc.

As all of the UGRs were familiar with this system for locating and exchanging information it appeared to give the project a sense of ongoing connection, between group members and the PI. However, it was primarily through individual liaison between the PI and group members that all interviews were coordinated; this occurred via text (for example when organizing a time to meet to conduct an interview) and email. Associated with that, the PI liaised, first of all, with the interviewees regarding the best time/date for interviews – to avoid the healthcare professional being contacted by multiple people.

From review of the process and taking cognizance of the UGRs feedback, the project demanded a high degree of commitment from all team members, to be alert to communications at any time, to be flexible with arrangements to interview etc. Ability to attend interviews in the evening (sometimes late evening linked to participants working night shifts) were necessary to complete the project. In short, the team work demanded mutual respect and focus on a common goal.

Hoffman et al (2009) notes that there is commonly the need for educators and/or researchers to initiate guide and facilitate student involvement. This study supports that claim but advances the point that working with volunteers, who are supported in a way that offers flexibility of involvement can be highly successful.

The consistent message from all UGRs was that involvement in the study did have a positive impact on their confidence to undertake more research and it improved their knowledge regarding some of the organizational, practical and some of theoretical elements of research. Whether this has an ongoing effect on future studies and/or research practice is not known, but can easily explored through follow- up with the team members.

From IPE curious, to IPE proponents: why did it work?

Interestingly, only three of the seven UGRs felt that it would be useful to have other undergraduate students experience what they had experienced, as a means to helping them understand more about the value of IPE. However, the UGRs, at that stage, had not been privy to the themes generated from the UGRs' interviews. All UGRs had articulated a significant positive shift in their attitudes toward IPE and the value of IPE to their future as a healthcare profession and/or as a level 4 student engaging in IPE. In this way, they articulated a change of believe, a change in attitude and for some a declaration about a changed approach to participation in future studies; in some respects, transformational.

It is likely that the UGRs were able to identify with the recent graduates; they shared a common experience of study at the University and experience of pre-registration IPE modules. The fact that the healthcare professionals voiced similar positives and negatives related to IPE, experiences that they themselves recognized, may have added validity to their accounts. The healthcare professionals' accounts were likely to evaluated as authentic, their view points valid.

Undergraduate students who have selected their course of study are motivated to be ultimately 'belong' to their respective professional group and are therefore likely to aspire to the values, attitudes, skills associated with that group (Oandasan and Reeves 2005). With that in mind, it is possible that the views of the professionals, who were reflecting on daily practice, may have carried a credibility that perhaps a non-practicing University tutor may not have, in the eyes of the student.

Aside from these dynamics, the UGRs were immersed in the iterative, interpretive acts of thematic analysis. These processes can be seen to mirror the cognitive and personal skills associated with reflection i.e. being continuously self-aware of their own beliefs and experiences and attempting to divorce these from impacting upon the analysis and evaluation of multiple perspectives presented by the interviewees (Jasper 2003). The use of reflection is viewed as an essential way to learn from

experiences, a means to inter-relate theory and practice through purposeful, structured critical thought (Jasper 2003). A reflexive researcher considers how they, themselves, may influence the research process and outcome based on his/her background, values, biases, perceptions and interests (Bryman 2001); the parallels between reflection and these research-related skills are notable. The UGRs were made alert to other ways of thinking and experiencing things, scrutinizing the professionals' description of events and their descriptions of their feelings etc. This exposure, through participation in research, to multiple voices, different accounts of experiences, including the interaction with their team members and the PI, is essentially a highly active form of learning.

It is noteworthy that one of the UGRs was uncertain whether having a recent graduate talk about the importance and value of IPE would have an impact upon the attitudes or beliefs of undergraduate students (see the final quotation from the UGRs themes). This view is possibly well founded. A didactic approach to relaying the message about interprofessional practice after pre-registration IPE may fall on deaf ears. Instead, the suggestions of the UGRs to have the professionals engage in some more meaningful, longer term dialogue may be of value and presents as an opportunity for future research.

The next stages: using the findings

Whether this process would work on a larger scale or would work if the connections being made between professionals and students were 'compulsory' is to be seen. This study was characterized by having appealed to volunteers who were reflective, self-directed, committed individuals who were working towards a common goal.

The next venture would be to trial the project, perhaps involving former graduates as e-tutors or coming in at varied points throughout the four years to discuss practice issues with student groups, to help establish the connection between pre-registration IPE and practice demands. Other options are to develop some of the study findings into trigger material that students could work with at specific stages of their learning.

The enthusiasm of the UGRs should be inspiration enough for both staff and students to carry forward these well considered actions for the development of IPE in the future:

> *At this stage I'm really excited because we've got all the data together and it's been brilliant. I'm so hopeful for what can be done about IPE. I think there's a lot of positives to it already, there's just a few negatives that need to be sorted out. But for me it's been really worthwhile and I'm just hoping that it'll have the effect that we intend it to have..." UGR_I4*

Summary of the key findings and implications for future studies and developments in IPE

This pilot study was successful in recruiting undergraduate healthcare students from a variety of programmes to become pioneering researchers, exploring the views of healthcare professionals regarding the importance and applicability of pre-registration IPE experiences to everyday practice. The study sought to reveal whether involvement in such a novel project would: a. change the perspectives of the undergraduate researchers regarding the value of pre-registration IPE; and b. advance their knowledge and skills of research.

The findings from this exploratory, qualitative study demonstrated that the undergraduate researchers did develop their research knowledge and skills, enabling them to generate rich and valuable findings which can directly inform the development of IPE. Moreover, the undergraduate researchers reported a significant positive shift in their views and attitudes towards pre-registration IPE. They were able to better envisage the connection between IPE and practice, a view established by the credible accounts from healthcare professionals who asserted that interprofessional practice was indeed a cornerstone of good patient care.

The detail in the findings of the study provide guidance for other educationalists and/or researchers interested in finding out how they can encourage and then support students to become actively involved in any educational initiative and/or IPE development scheme like the one described here.

Key learning points for those involved with pre-registration IPE initiatives and dissemination of the findings

Key learning points for those at other Higher Education Institutions developing and delivering pre-registration IPE

Recent healthcare graduates were able to reflect upon their pre-registration IPE experiences and propose useful suggestions for the enhancement of University-based IPE. The most commonly proposed suggestions are noted here:

- The use of 'real' patient/client cases/scenarios are highly valued as vehicles for small group, mixed-profession learning. This is enhanced when the student group is perceived to be an *authentic* group, in terms of size and composition i.e. mirroring what is found in practice. Where possible, the involvement of patients, carers, families, health and social care professionals in University based IPE events/teaching and learning is highly valued.

- There is a high value placed upon learning through working together in small groups; working together towards a valued, common goal. However, students perceive that this is enhanced where careful consideration has been given to timetabling and planning across different curricula. Students highly value space and time begin made available to enable groups to meet, to discuss and share experiences. In the absence of time and space to learn and work together, the learning and group success is diminished.

- Recent graduates can provide a rich source of material about how they practice in an interprofessional way, materials which may be useful as a teaching resource for Higher Education Institutions.

Supporting current healthcare students to further develop research skills – moving towards research dissemination

The healthcare students involved in conducting this pilot study now have the opportunity to extend their experiences to writing research reports for publication. Several students (some of whom have recently graduated) have expressed interest in working together to generate a research report, suitable for publication in a peer reviewed journal, for example, The Journal of Interprofessional Care. This offers an opportunity to extend skills of writing for publication, itself, an experience that will require evaluation.

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Appendices

Appendix A: interview schedule for healthcare professionals

Note: all participants were required to provide written, informed consent before telephone interview contact is made for the interview.

Introduction by the interviewer.

Is this a good time to talk?

Reminder and that the interview is being digitally recorded but that their identity will be concealed in any output related to the research.

Reminder that we are interested in *their* views and experiences – there is no right or wrong answer.

Do you have any questions before we start?

Pre-interview: basic outline of interview

- Firstly – basic questions about age, profession
- Talking about your reflections on IPE at University – experiences, positives, negatives
- Reflection on IPE relative to current work experiences

Gathering background information about the interviewee

Name Age Profession Date of graduation Number of years of IPE at QMU completed	
Work experience post-qualification?	What role? What context: voluntary sector, social care, primary or secondary care? Full time or part time? Main responsibilities?
Duration of experience in current practice?	In years or months.
Other qualifications	
Other past experience of health or social care practice?	
Re-check address details for mailing follow up respondent validation summary	Reiterate the nature of the follow up summary and short questions accompanying this. Postcode:

When I mention, IPE at QMU, what are your immediate memories?

- Probe – what do you think contributed to that?
- Can you give me an example of that?
- What did you think you learned from that experience?
- How does that relate or fail to relate to their work experience?
- How do you think that could be improved?

Can you tell me about the people that you work with (or have worked with) in health/social care?

- What do you know about their roles etc?
- How do you work with these people? Why?
- Does this impact on patient care?

When you left University – how informed did you feel about other health and social care professionals roles?

- Probe: was that important or not? How? Can you explain that?

One of the aims of IPE is development of skills and knowledge about team working or working with others. What is your view of this experience?

- Do you have a specific memory of an event that illustrates your point?
- Can you give me an example?
- Can you tell me what you mean by that?
- How does this compare to the practice experience? How prepared were you for practice and working in teams?
- How could students learn about this?

What kind of communication challenge or issues present to you in your working experience?

We are interested in knowing more about how your University experience prepared you communication in practice.

- Can you tell me know prepared you felt?
- What contributed to that?
- What worked?
- What could have been done?

Sometimes learning is not shaped by *planned* learning experiences – but other positive or negative outcomes arise. Thinking about your IPE experiences – are there any positive or negative outcomes that you can think of?

- Can you explain these?
- How does this relate to your current working practice?
- What happened?
- When?
- How?
- Ideas on how this can be avoided/enhanced

Thinking broadly about what IPE could achieve - if you were able to shape IPE at University – knowing what practice is like – what changes would you make?

- What would you stop?
- What would you start?
- What would you 'keep doing'?
- Why?
- Explain

Reflecting on your views about IPE now – looking back, do you think your views of IPE have changed – since you left University?

- Why? And How?

Draw interview to a close – ask if there is anything more to add/things that were missing in their opinion.

Reminder of the respondent validation summary and follow up questions.

Thank you for your time and participation.

Appendix B: interview schedule for the undergraduate researchers

Context of the interviews

Current stage of the research:
• There have been 10 interviews conducted with different graduates. All of the themes from this data are generated. • PI is writing the report for the project and now needs views of the co-researchers to be collected.

Introduction – CG, good time to talk? 20 mins-ish

Reminder – that this phonecall is being recorded, but that anonymity will be safeguarded - you will not be identifiable in any reporting of the findings.

Intro CG QM graduate physio – MSc, no firsthand knowledge of IPE, involved with producing transcripts, so listened to the interviews

What we're hoping to achieve with phonecall:

- explore your views and experiences of taking part in the IPE mini-project with SH.
- how your views of IPE may have changed as a consequence of this experience.

Time/date of interview:

Confirm some demographic data and background on your research knowledge/experience	
Age	
Which health care programme are your studying?	
Which year?	
Do you have any other qualifications or training linked to health and social care?	Note these:
Do you have any work experience linked to health and social care – aside from your placement experiences.	What is the nature of this?
Before you started work on this project, in October 2010 – what was your firsthand knowledge of *research*?	Eg **experience** of data collection, data analysis methods, issues related to consent, ethical issues (anonymity, confidentiality, withdrawal, secure storage of data etc). Working in a research team? Theory of research?

And *qualitative* research in particular? e.g. interviewing, focus groups?	
If level 4? What was your final year project or dissertation?	Nature of their dissertation (paper based, e.g. extended lit review, or actual project work) What they *perceive* they learned from their final year project?

Thinking back to Semester 1: why did you volunteer for the study?	What was your interest in this project? What did you hope to get out of it? IPE or research or both?	Notes:
- Knowledge and understanding of **IPE**?	Why were you interested in IPE? How did that evolve? What did you hope to learn more about? Did you learn more?	
- Knowledge and understanding and experience of doing **research**? - Particularly **qualitative** research	What did you want to learn or find out? Why? What did you feel you learned? How did this fit with your other studies, e.g. time to do this?	
You have experienced IPE, and you have now done the project/read about the views and experiences of QMU graduates, who have done IPE:		
Have your views on IPE changed – as a consequence of taking part in the project?	What view did you have initially? In what way have your views changed?	

Eg interviewees mentioned • *working with others in practice,* • *how IPE impacted on their team working and communication skills etc*	Can you give me an example?	
Finally – thinking now about how the findings from the study can be used		
How do you think the findings from the study can be used?	• at QMU programme, • wider context for IPE? • In clinical practice? • For other researchers? • How? • Why?	
Do you think that the type of experience you have had, as a co-researcher, could be used to help others learn about the value of IPE?	In the same format? Done in a different way?	
Do you have any other points to make that you think we have not covered?		
Thank you		

Appendix C: respondent validation template for healthcare professionals

Thank you for taking part in the recent telephone interview regarding Interprofessional Education at Queen Margaret University. This summary has been written to reflect the responses you gave during that interview.

Please read through the interview summary to answer the questions that follow. We would like your views on the *accuracy* of this summary as a true reflection of your responses as well as asking if there is any further information that you would like to contribute. Thank you for volunteering to participate in this study.

- *Presentation of the anonymised interview summary*

You have now taken part in an interview and read a summary of what was understood to be the key points said during that interview. Please read through the following questions and record your answers in the space provided below. If you require additional space, please use the over leaf of this page or include a separate sheet of paper.

1. Having read the summary included in this package, do you think this is an accurate summary of the interview? Yes or No (circle one)

    a. If you circled No, can you please note and explain the changes you would like to make?

2. Considering the topics discussed during the interview, is there anything that you would like to add, expand on or clarify?